

REMARKS

Appreciation is hereby expressed to Examiner Felton for the very thorough and professional Office Action. Pursuant to the Office Action, Claims 2 and 3 have been deleted, and Claims 1, 7, 13, and 14 amended to more definitely set forth the inventions and obviate the rejections. Claim 1 has been amended by combining the content of original Claim 1 with the content of original Claims 2 and 3. Claim 7 has been amended by narrowing the scope of the fuels set forth in the original formula II to exclude compounds disclosed in the prior art reference of Diede. Further, the dependency of Claims 13 and 14 has been changed so that these claims now depend on Claim 1. The present amendment is deemed not to introduce new matter. Claims 1 and 4-14 remain in the application.

Reconsideration is respectfully requested of the rejection of Claims 1, 2, 4-9, and 11-13 under 35 U.S.C. § 102(e) as being anticipated by Diede.

The issues presented in the rejection are:

1. Whether the Claims 1, 2, 4-9 and 11-13 are anticipated by Diede.
2. Whether the Diede reference renders unpatentably obvious the subject matter called for in the claims herein.

The answer to both of these issues is in the negative for the reasons as follows:

To constitute anticipation, all material elements of a claim must be found in one prior art source. *In re Kalm*, 154 USPQ 10 (CCPA, 1967). In considering the anticipatory effect of a reference, not only its specific teaching, but also the inferences which one skilled in the art would reasonably be expected to draw therefrom should be taken into account. *In re Prada*, 159 USPQ 342

(CCPA, 1968).

Claim 1, the only independent claim in the application, has been amended to now require that the liquid hypergolic propellant further contains a sensitizer and gelling agent. As the Examiner recognized in the Office Action on page 3, paragraph 5, the Diede patent fails to disclose a gelling agent. It is also respectfully urged that there is no disclosure whatever in the Diede reference of a sensitizer in a liquid hypergolic propellant, as now called for in the claims herein. It is, therefore, respectfully submitted that Diede fails to disclose the composition elements (c) and (d) now called for in the claims herein. Consequently, it is respectfully urged that the rejection fails, as a matter of law, in view of the above authorities.

Additionally, the Diede reference discloses a hypergolic fuel with rapid ignition capabilities which remains stable when subjected to long-term storage at maximum and minimum surface temperatures. These properties of the fuel are described in the examples of Diede, columns 5, 6 and 7, which disclose hypergolic fuels with ignition delays on the order of 1 – 3 milliseconds and suitable environmental aging. In view of Diede's teaching that his hyperbolic propellant exhibits a satisfactory ignition delay and suitable long-term storage properties, it is respectfully submitted that one of ordinary skill in the art would conclude that there is no need for a sensitizer or gelling agent. On the contrary, that teaching or suggestion comes only from the present application, and constitutes an important element or aspect of the present invention.

In view of this overall disclosure of the Diede reference, it is respectfully submitted that one of ordinary skill in the art would reasonably be expected to draw the conclusion that the hypergolic fuel of Diede has satisfactory ignition delay properties and long-term storage properties which would

render unnecessary the inclusion of any additives to effect a change in the ignition delay and/or storage properties. Consequently, Diede fails to inherently disclose or suggest to one of ordinary skill in the art the compositions now called for in the claims herein.

Respecting Claim 7, the constituency of Formula II have been narrowed to obviate the rejection and distinguish from the Diede patent. Consequently, it is believed that Claim 7 as amended clearly patentably distinguishes from the Diede reference.

Respecting Claim 8, there is no disclosure in Diede of a sensitizer comprising one or more amines, azides, and/or amides. Moreover, there is no disclosure in Diede of the use of a sensitizer as defined in Claim 9, Formula III. Therefore, it is respectfully submitted that these claims clearly patentably distinguish from Diede. Withdrawal of the rejection is accordingly requested.

Reconsideration is respectfully requested of the rejection of Claims 3, 10 and 14 under 35 U.S.C. § 103(a) as being unpatentable over Diede as applied to Claims 1, 2, 4-9, and 4-13, and further in view of Thompson.

The issue presented is whether the Examiner's combination of references render the present invention obvious under 35 U.S.C. § 103.

It is respectfully submitted that the answer to this issue is in the negative.

In order for a combination of references to render an invention obvious, it must be obvious that the teachings can be combined. *In re Avery*, 186 USPQ 161 (CCPA, 1975). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching, suggestion, or incentive supporting the combination. *In re Geiger*, 2 USPQ 2d 1276 (CAFC, 1987).

The deficiencies of the Examiner's primary reference of Diede are discussed above.

The Thompson patent, the Examiner's secondary reference, discloses a hypergolic fuel comprising diethylethanolamine, triethylamine, carbon, and a gelling agent such as silica. There is, however, no disclosure in the Thompson reference that the gelling agent disclosed therein could also be used in a liquid hyperbolic propellant comprising reactive metals and/or reactive metal salts. On the contrary, that teaching or suggestion comes only from the present application and constitutes an important element or aspect of the present invention.

It is respectfully submitted that one of ordinary skill in the art would understand that gelling agents are little used in liquid propellants because they decrease energy, have the potential to settle out upon storage, and sometimes convert to cause the fuel or oxidizer to become unstable. This is especially the case in hydrogen-based fuels and nitric acid-based oxidizers in which explosions have occurred due to contamination within the gelling agent. Because of these inherent dangers in using gelling agents in liquid propellants, it is respectfully submitted that one of ordinary skill in the art would not consider it obvious to employ a gelling agent in a particular liquid hypergolic propellant.

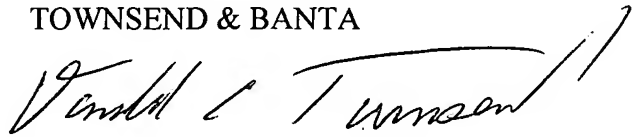
Moreover, there is no disclosure in the Thompson patent of a hypergolic fuel containing a sensitizer with reactive metals and/or reactive metal salts. Further, there is no teaching, suggestion, or incentive to combine the references in the manner suggested by the Examiner. Consequently, the rejection fails, as a matter of law, in view of the above authorities. For this reason, the Examiner would be justified in no longer maintaining the rejection. Withdrawal of the rejection is accordingly respectfully requested.

In view of the foregoing, it is respectfully submitted that the application is now in

condition for allowance, and early action and allowance thereof is accordingly respectfully requested. In the event there is any reason why the application cannot be allowed at the present time, it is respectfully requested that the Examiner contact the undersigned at the number listed below to resolve any problems.

Respectfully submitted

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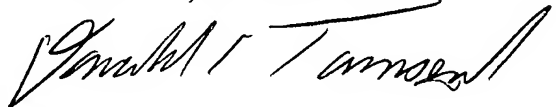
Date: December 18, 2006

**CERTIFICATE OF MAILING**

I hereby certify that this Amendment in Docket No. SWI-004-USA-P, Serial No. 10/712,534, filed November 4, 2003, is being deposited with the United States Postal Service with sufficient postage as first-class mail in an envelope addressed to:

Mail Stop Amendment  
Commissioner For Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

On December 18, 2006.



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